



UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

DH

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/423,554	11/10/99	ARISTIDOU	A 0933-148P

HM22/0405
BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH VA 22040-0747

EXAMINER
WALICKA, M

ART UNIT	PAPER NUMBER
1652	8

DATE MAILED: 04/05/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/423,554	Applicant(s) ARISTIDOU ET AL.	
	Examiner Malgorzata A. Walicka	Art Unit 1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 1999 and 29 December 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claims 1-38 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- | | |
|---|--|
| 15) <input type="checkbox"/> Notice of References Cited (PTO-892) | 18) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 16) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 19) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 17) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 20) <input type="checkbox"/> Other: _____ |

The application is a 371 of PCT/FI99/00185 published as WO 94/18326. The preliminary amendments filed on November 10 and December 29, 1999 has been entered. Claims 1-38 are pending.

Election/Restriction

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

- Group I: claims 1-7, 8-10, 17-20, 22, 25-26, 28, 29, 30, 33 and 38 drawn to an organism and method of production of ethanol, classified in class 435 subclass 161.3 and 254.2.
- Group II: claims 1-7, 15-16, 17-20, 21, 25-26, 28, 29, 31 and 32 drawn to an organism and method of production of xylitol, classified in class 435 subclass 155 and 254.2.
- Group III: claims 1-7, 11, 12, 17-18, 23-24, 27-30, 34, 35 and 36 drawn to an organism and method of production of lysine, classified in class 435 subclass 115 and 254.2.
- Group IV: claims 1-7, 13, 14, 17-20, 28-30 and 36-37, drawn to an organism and method of production of polyhydroxybutyrate, classified in class 435 subclass 155 and 254.2.

The inventions listed as Groups I-IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The special technical features of Group I, II, III and IV are the recombinant microorganisms which produce ethanol, xylitol, lysine and polyhydroxybutyrate. Groups I-IV are drawn to four independent methods of making different chemical compounds. 37 CFR 1.475 does not provide for multiple products or **methods** within a single application and therefore unity of invention is lacking with regard to Groups I-IV. Thus, restriction is proper.

In accordance with 37 C.F.R. 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted. Common claims among Groups will be examined to the extent necessary for the complete examination of the elected subject matter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Malgorzata A. Walicka, Ph.D., whose telephone number

Art Unit: 1652

is (703) 305-7270. The examiner can normally be reached Monday-Friday from 10:00 a.m. to 4:30 p.m.

If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapura Achutamurthy, Ph.D. can be reached on (703) 308-3804. The fax number for this Group is (703) 305-3014.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionists whose telephone number is (703) 308-0196.

Malgorzata A. Walicka, Ph.D.
Art Unit 1652
Patent Examiner


NASHAAT T. NASHED PHD.
PRIMARY EXAMINER

Christine Washington

1652

5001

#24
330-00

PAGE: 1

RAW SEQUENCE LISTING
PATENT APPLICATION US/09/423,554

DATE: 12/29/1999
TIME: 17:16:25

Input Set: I423554.RAW

This Raw Listing contains the General Information
Section and up to first 5 pages.

P.S

ENTERED

1 <110> APPLICANT: ARISTIDOU, Aristos
2 LONDESBOROUGH, John
3 PENTTILA, Merja
4 RICHARD, Peter
5 RUOHONEN, Laura
6 SODERLUND, Hans
7 TELEMANN, Anita
8 TOIVARI, Mervi
9 <120> TITLE OF INVENTION: TRANSFORMED MICROORGANISMS WITH IMPROVED PROPERTIES
10 <130> FILE REFERENCE: 0933-148P
11 <140> CURRENT APPLICATION NUMBER: US/09/423,554
12 <141> CURRENT FILING DATE: 1999-12-28
13 <150> EARLIER APPLICATION NUMBER: PCT/FI99/00185
14 <151> EARLIER FILING DATE: 1999-03-11
15 <160> NUMBER OF SEQ ID NOS: 14
16 <170> SOFTWARE: PatentIn Ver. 2.0
17 <210> SEQ ID NO 1
18 <211> LENGTH: 71
19 <212> TYPE: PRT
20 <213> ORGANISM: Aspergillus nidulans
21 <400> SEQUENCE: 1
22 Arg Gly Thr Asn Asn Glu Glu Leu Leu Asn Asp Lys Leu Tyr Leu Gly
23 1 5 10 15
24 Leu Arg Gln Arg Arg Ala Gln Gly Glu Glu Tyr Asp Lys Phe Val Asp
25 20 25 30
26 Lys Phe Val Arg Met Ala Gly Arg Gly Phe Pro Met Pro Ile Ser Thr
27 35 40 45
28 Cys Ser Glu Asp Phe Gly Leu Gln Asn Ala Lys Arg Ile Leu Asp Arg
29 50 55 60
30 Tyr Arg Ser Gln Leu Pro Cys
31 65 70
32 <210> SEQ ID NO 2
33 <211> LENGTH: 156
34 <212> TYPE: PRT
35 <213> ORGANISM: Trichoderma reesei
36 <400> SEQUENCE: 2
37 Ala Gly Ala His Arg Gly Gly Gly Arg Ser Arg Thr Ser Gly Ser Pro
38 1 5 10 15
39 Gly Cys Arg Asn Ser Ala Arg Gly Met Asn Ser Ile Leu Arg Thr Thr
40 20 25 30
41 Ser Ser Arg Leu Ser Lys Ser Ser Asn Ile His Cys Thr Ser Thr Thr
42 35 40 45
43 Arg Tyr Ser Pro Gln Arg Ser Ser Ser Pro Leu Cys Cys Lys Pro
44 50 55 60

RECEIVED
MAR 13 2000
TC 1700 MAIL ROOM

RECEIVED
MAR 14 2000
TC 1700 MAIL ROOM

PAGE: 2

RAW SEQUENCE LISTING
PATENT APPLICATION US/09/423,554

DATE: 12/29/1999
TIME: 17:16:25

Input Set: I423554.RAW

```

45      Ser Ser Ser Ser Leu Thr Met Ser Ser Ser Lys Pro Thr Lys Phe Ser
46      65                      70                      75                      80
47      His Leu Pro Leu Ser Thr Thr Gly Pro Leu Glu Cys Ala Leu Thr Gly
48                      85                      90                      95
49      Thr Ala Leu Leu Asn Ser Pro Ile Phe Asn Lys Gly Ser Ala Phe Pro
50                      100                      105                      110
51      Leu Ser Glu Arg Arg Gln Phe Asn Leu Thr Gly Leu Leu Pro Ala Asn
52                      115                      120                      125
53      Glu Gln Thr Leu Asp Asn Gln Val Lys Arg Ala Tyr Gln Gln Tyr Gln
54                      130                      135                      140
55      Ser Arg Gly Asp Asp Trp Pro Arg Thr Val Pro Asp
56      145                      150                      155

57 <210> SEQ ID NO 3
58 <211> LENGTH: 584
59 <212> TYPE: PRT
60 <213> ORGANISM: Homo sapiens
61 <400> SEQUENCE: 3
62      Met Leu Ser Arg Leu Arg Val Val Ser Thr Thr Cys Thr Leu Ala Cys
63      1                      5                      10                      15
64      Arg His Leu His Ile Lys Glu Lys Gly Lys Pro Leu Met Leu Asn Pro
65                      20                      25                      30
66      Arg Thr Asn Lys Gly Met Ala Phe Thr Leu Gln Glu Arg Gln Met Leu
67                      35                      40                      45
68      Gly Leu Gln Gly Leu Leu Pro Lys Ile Glu Thr Gln Asp Ile Gln
69      50                      55                      60
70      Ala Leu Arg Phe His Arg Asn Leu Lys Lys Met Thr Ser Pro Leu Glu
71      65                      70                      75                      80
72      Lys Tyr Ile Tyr Ile Met Gly Ile Gln Glu Arg Asn Glu Lys Leu Phe
73                      85                      90                      95
74      Tyr Arg Ile Leu Gln Asp Asp Ile Glu Ser Leu Met Pro Ile Val Tyr
75                      100                      105                      110
76      Thr Pro Thr Val Gly Leu Ala Cys Ser Gln Tyr Gly His Ile Phe Arg
77                      115                      120                      125
78      Arg Pro Lys Gly Leu Phe Ile Ser Ile Ser Asp Arg Gly His Val Arg
79      130                      135                      140
80      Ser Ile Val Asp Asn Trp Pro Glu Asn His Val Lys Ala Val Val Val
81      145                      150                      155                      160
82      Thr Asp Gly Glu Arg Ile Leu Gly Leu Gly Asp Leu Gly Val Tyr Gly
83                      165                      170                      175
84      Met Gly Ile Pro Val Gly Lys Leu Cys Leu Tyr Thr Ala Cys Ala Gly
85                      180                      185                      190
86      Ile Arg Pro Asp Arg Cys Leu Pro Val Cys Ile Asp Val Gly Thr Asp
87      195                      200                      205
88      Asn Ile Ala Leu Leu Lys Asp Pro Phe Tyr Met Gly Leu Tyr Gln Lys
89      210                      215                      220
90      Arg Asp Arg Thr Gln Gln Tyr Asp Asp Leu Ile Asp Glu Phe Met Lys
91      225                      230                      235
92      Ala Ile Thr Asp Arg Tyr Gly Arg Asn Thr Leu Ile Gln Phe Glu Asp
93                      245                      250                      255
94      Phe Gly Asn His Asn Ala Phe Arg Phe Leu Arg Lys Tyr Arg Glu Lys

```

RECEIVED
MAR 14 2000
TOLSON
FBI

PAGE: 3

RAW SEQUENCE LISTING
 PATENT APPLICATION US/09/423,554

DATE: 12/29/1999
 TIME: 17:16:25

Input Set: I423554.RAW

```

95          260          265          270
96      Tyr Cys Thr Phe Asn Asp Asp Ile Gln Gly Thr Ala Ala Val Ala Leu
97          275          280          285
98      Ala Gly Leu Leu Ala Ala Gln Lys Val Ile Ser Lys Pro Ile Ser Glu
99          290          295          300
100     His Lys Ile Leu Phe Leu Gly Ala Gly Glu Ala Ala Leu Gly Ile Ala
101     305          310          315          320
102     Asn Leu Ile Val Met Ser Met Val Glu Asn Gly Leu Ser Glu Gln Glu
103          325          330          335
104     Ala Gln Lys Lys Ile Trp Met Phe Asp Lys Tyr Gly Leu Leu Val Lys
105          340          345          350
106     Gly Arg Lys Ala Lys Ile Asp Ser Tyr Gln Glu Pro Phe Thr His Ser
107          355          360          365
108     Ala Pro Glu Ser Ile Pro Asp Thr Phe Glu Asp Ala Val Asn Ile Leu
109          370          375          380
110     Lys Pro Ser Thr Ile Ile Gly Val Ala Gly Ala Gly Arg Leu Phe Thr
111     385          390          395          400
112     Pro Asp Val Ile Arg Ala Met Ala Ser Ile Asn Glu Arg Pro Val Ile
113          405          410          415
114     Phe Ala Leu Ser Asn Pro Thr Ala Gln Ala Glu Cys Thr Ala Glu Glu
115          420          425          430
116     Ala Tyr Thr Leu Thr Glu Gly Arg Cys Leu Phe Ala Ser Gly Ser Pro
117          435          440          445
118     Phe Gly Pro Val Lys Leu Thr Asp Gly Arg Val Phe Thr Pro Gly Gln
119     450          455          460
120     Gly Asn Asn Val Tyr Ile Phe Pro Gly Val Ala Leu Ala Val Ile Leu
121     465          470          475          480
122     Cys Asn Thr Arg His Ile Ser Asp Ser Val Phe Leu Glu Ala Ala Lys
123          485          490          495
124     Ala Leu Thr Ser Gln Leu Thr Asp Glu Glu Leu Ala Gln Gly Arg Leu
125          500          505          510
126     Tyr Pro Pro Leu Ala Asn Ile Gln Glu Val Ser Ile Asn Ile Ala Ile
127          515          520          525
128     Lys Val Thr Glu Tyr Leu Tyr Ala Asn Lys Met Ala Phe Arg Tyr Pro
129          530          535          540
130     Glu Pro Glu Asp Lys Ala Lys Tyr Val Lys Glu Arg Thr Trp Arg Ser
131     545          550          555          560
132     Glu Tyr Asp Ser Leu Leu Pro Asp Val Tyr Glu Trp Pro Glu Ser Ala
133          565          570          575
134     Ser Ser Pro Pro Val Ile Thr Glu
135          580
136 <210> SEQ ID NO 4
137 <211> LENGTH: 565
138 <212> TYPE: PRT
139 <213> ORGANISM: Schizosaccharomyces pombe
140 <400> SEQUENCE: 4
141     Met Pro Ala Gly Thr Lys Glu Gln Ile Glu Cys Pro Leu Lys Gly Val
142     1          5          10          15
143     Thr Leu Leu Asn Ser Pro Arg Tyr Asn Lys Asp Thr Ala Phe Thr Pro
144          20          25          30

```

PAGE: 4

RAW SEQUENCE LISTING
PATENT APPLICATION US/09/423,554

DATE: 12/29/1999
TIME: 17:16:25

Input Set: I423554.RAW

145	Glu	Glu	Arg	Gln	Lys	Phe	Glu	Ile	Ser	Ser	Arg	Leu	Pro	Pro	Ile	Val
146			35					40				45				
147	Glu	Thr	Leu	Gln	Gln	Gln	Val	Asp	Arg	Cys	Tyr	Asp	Gln	Tyr	Lys	Ala
148			50				55					60				
149	Ile	Gly	Asp	Glu	Pro	Leu	Gln	Lys	Asn	Leu	Tyr	Leu	Ser	Gln	Leu	Ser
150			65				70				75				80	
151	Val	Thr	Asn	Gln	Thr	Leu	Phe	Tyr	Ala	Leu	Ile	Ser	Gln	His	Leu	Ile
152					85					90				95		
153	Glu	Met	Ile	Pro	Ile	Ile	Tyr	Thr	Pro	Thr	Glu	Gly	Asp	Ala	Ile	Lys
154				100					105					110		
155	Gln	Phe	Ser	Asp	Ile	Tyr	Arg	Tyr	Pro	Glu	Gly	Cys	Tyr	Leu	Asp	Ile
156			115					120				125				
157	Asp	His	Asn	Asp	Leu	Ser	Tyr	Ile	Lys	Gln	Gln	Leu	Ser	Glu	Phe	Gly
158			130				135					140				
159	Lys	Ser	Asp	Ser	Val	Glu	Tyr	Ile	Ile	Ile	Thr	Asp	Ser	Glu	Gly	Ile
160			145			150					155				160	
161	Leu	Gly	Ile	Gly	Asp	Gln	Gly	Val	Gly	Gly	Val	Leu	Ile	Ser	Val	Ala
162				165					170					175		
163	Lys	Gly	His	Leu	Met	Thr	Leu	Cys	Ala	Gly	Leu	Asp	Pro	Asn	Arg	Phe
164				180					185					190		
165	Leu	Pro	Ile	Val	Leu	Asp	Val	Gly	Thr	Asn	Asn	Glu	Thr	His	Arg	Lys
166			195					200				205				
167	Asn	His	Gln	Tyr	Met	Gly	Leu	Arg	Lys	Asp	Arg	Val	Arg	Gly	Glu	Gln
168			210				215					220				
169	Tyr	Asp	Ser	Phe	Leu	Asp	Asn	Val	Ile	Lys	Ala	Ile	Arg	Glu	Val	Phe
170			225			230					235			240		
171	Pro	Glu	Ala	Phe	Ile	His	Phe	Glu	Asp	Phe	Gly	Leu	Ala	Asn	Ala	Lys
172				245					250					255		
173	Arg	Ile	Leu	Asp	His	Tyr	Arg	Pro	Asp	Ile	Ala	Cys	Phe	Asn	Asp	Asp
174			260						265					270		
175	Ile	Gln	Gly	Thr	Gly	Ala	Val	Ala	Leu	Ala	Ala	Ile	Ile	Gly	Ala	Leu
176			275				280					285				
177	His	Val	Thr	Lys	Ser	Pro	Leu	Thr	Glu	Gln	Arg	Ile	Met	Ile	Phe	Gly
178			290				295					300				
179	Ala	Gly	Thr	Ala	Gly	Val	Gly	Ile	Ala	Asn	Gln	Ile	Val	Ala	Gly	Met
180			305			310					315				320	
181	Val	Thr	Asp	Gly	Leu	Ser	Leu	Asp	Lys	Ala	Arg	Gly	Asn	Leu	Phe	Met
182				325					330					335		
183	Ile	Asp	Arg	Cys	Gly	Leu	Leu	Leu	Glu	Arg	His	Ala	Lys	Ile	Ala	Thr
184				340					345					350		
185	Asp	Gly	Gln	Lys	Pro	Phe	Leu	Lys	Lys	Asp	Ser	Asp	Phe	Lys	Glu	Val
186			355					360				365				
187	Pro	Ser	Gly	Asp	Ile	Asn	Leu	Glu	Ser	Ala	Ile	Ala	Leu	Val	Lys	Pro
188			370				375					380				
189	Thr	Ile	Leu	Leu	Gly	Cys	Ser	Gly	Gln	Pro	Gly	Lys	Phe	Thr	Glu	Lys
190			385			390					395				400	
191	Ala	Ile	Arg	Glu	Met	Ser	Lys	His	Val	Glu	Arg	Pro	Ile	Ile	Phe	Pro
192				405					410					415		
193	Ile	Ser	Asn	Pro	Thr	Thr	Leu	Met	Glu	Ala	Lys	Pro	Asp	Gln	Ile	Asp
194				420					425					430		

PAGE: 5

RAW SEQUENCE LISTING
PATENT APPLICATION US/09/423,554

DATE: 12/29/1999
TIME: 17:16:25

Input Set: I423554.RAW

```

195      Lys Trp Ser Asp Gly Lys Ala Leu Ile Ala Thr Gly Ser Pro Leu Pro
196          435                      440                      445
197      Pro Leu Asn Arg Asn Gly Lys Lys Tyr Val Ile Ser Gln Cys Asn Asn
198          450                      455                      460
199      Ala Leu Leu Tyr Pro Ala Leu Gly Val Ala Cys Val Leu Ser Arg Cys
200          465                      470                      475                      480
201      Lys Leu Leu Ser Asp Gly Met Leu Lys Ala Ala Ser Asp Ala Leu Ala
202          485                      490                      495
203      Thr Val Pro Arg Ser Leu Phe Ala Ala Asp Glu Ala Leu Leu Pro Asp
204          500                      505                      510
205      Leu Asn Asn Ala Arg Glu Ile Ser Arg His Ile Val Phe Ala Val Leu
206          515                      520                      525
207      Lys Gln Ala Val Ser Glu Gly Met Ser Thr Val Asp Leu Pro Lys Asp
208          530                      535                      540
209      Asp Ala Lys Leu Lys Glu Trp Ile Ile Glu Arg Glu Trp Asn Pro Glu
210          545                      550                      555                      560
211      Tyr Lys Pro Phe Val
212          565
213 <210> SEQ ID NO 5
214 <211> LENGTH: 669
215 <212> TYPE: PRT
216 <213> ORGANISM: Saccharomyces cerevisiae
217 <400> SEQUENCE: 5
218      Met Leu Arg Thr Arg Leu Ser Val Ser Val Ala Ala Arg Ser Gln Leu
219          1                      5                      10                      15
220      Thr Arg Ser Leu Thr Ala Ser Arg Thr Ala Pro Leu Arg Arg Trp Pro
221          20                      25                      30
222      Ile Gln Gln Ser Arg Leu Tyr Ser Ser Asn Thr Arg Ser His Lys Ala
223          35                      40                      45
224      Thr Thr Thr Arg Glu Asn Thr Phe Gln Lys Pro Tyr Ser Asp Glu Glu
225          50                      55                      60
226      Val Thr Lys Thr Pro Val Gly Ser Arg Ala Arg Lys Ile Phe Glu Ala
227          65                      70                      75                      80
228      Pro His Pro His Ala Thr Arg Leu Thr Val Glu Gly Ala Ile Glu Cys
229          85                      90                      95
230      Pro Leu Glu Ser Phe Gln Leu Leu Asn Ser Pro Leu Phe Asn Lys Gly
231          100                     105                     110
232      Ser Ala Phe Thr Gln Glu Glu Arg Glu Ala Phe Asn Leu Glu Ala Leu
233          115                     120                     125
234      Leu Pro Pro Gln Val Asn Thr Leu Asp Glu Gln Leu Glu Arg Ser Tyr
235          130                     135                     140
236      Lys Gln Leu Cys Tyr Leu Lys Thr Pro Leu Ala Lys Asn Asp Phe Met
237          145                     150                     155                     160
238      Thr Ser Leu Arg Val Gln Asn Lys Val Leu Tyr Phe Ala Leu Ile Arg
239          165                     170                     175
240      Arg His Ile Lys Glu Leu Val Pro Ile Ile Tyr Thr Pro Thr Glu Gly
241          180                     185                     190
242      Asp Ala Ile Ala Ala Tyr Ser His Arg Phe Arg Lys Pro Glu Gly Val
243          195                     200                     205
      Phe Leu Asp Ile Thr Glu Pro Asp Ser Ile Glu Cys Arg Leu Ala Thr

```

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

PAGE: 6

VERIFICATION SUMMARY
PATENT APPLICATION US/09/423,554

DATE: 12/29/1999
TIME: 17:16:25

Input Set: I423554.RAW

Line ? Error/Warning

Original Text

353 W "N" or "Xaa" used: Feature required

365 W "N" or "Xaa" used: Feature required

gaygtnggna cnaayaa

gtncctygda trttrtrtt raa